

Native American Graves Protection and Repatriation Act FY 2004 Grant Proposal

Please read the [Proposal Guidelines](#) carefully before completing this form. An electronic version of this form is available by contacting the National NAGPRA Program at (202) 354-2207, or via e-mail at NAGPRA_Grants@nps.gov. The form is also available on-line at www.cr.nps.gov/nagpra/GRANTS

SECTION 1. PROJECT INFORMATION

A. Type of Grant Proposal: *(Check one only)*

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> | 1. Tribal Documentation Award (not to exceed \$75,000) |
| <input type="checkbox"/> | 2. Tribal Repatriation Award (not to exceed \$15,000) |
| <input checked="" type="checkbox"/> | 3. Museum Documentation Award (not to exceed \$75,000) |
| <input type="checkbox"/> | 4. Museum Repatriation Award (not to exceed \$15,000) |

B. Project Summary: Briefly summarize your project in the space provided.

The Wisconsin Historical Society (WHS), formerly named State Historical Society of Wisconsin [SHSW], seeks funding to facilitate consultation with Native Nations and Tribes, and conduct research to assist in the documentation of Tribal affiliation for its collections, particularly human remains and funerary objects, from the Great Lakes region. The WHS would like to focus on its Great Lakes collection at this time due to the high number of requests for information, and because the majority of the collections from the Great Lakes region are affiliated with three Nations: the Ojibwe, the Menominee and the Potawatomi. The WHS will hire a research assistant through its Native American Internship Program to compile documentation that combines information from museum records, archival sources, Tribal Elders, and repatriation representatives. A second objective will be to host a workshop on pesticide residue contamination of museum collections for Tribal Museum staff; other museum staff; Tribal Repatriation Representatives and WHS staff. A third goal is to compile documentation on history of objects and to provide that documentation to Native Nations/Tribes in a useable format. This would include making digital images available for use by Elders and other members of the community who are unable to travel to Madison to view the collections. Museum staff will continue work on implementing traditional care and treatment plans provided by the Tribes. Finally, the results of this project will be shared at a second session on *Building Partnerships between Native Nations and Museums* at the annual Association of Midwestern Museums Conference to be held in Cincinnati, Ohio in the fall of 2005 giving museum professionals an opportunity to hear about successful NAGPRA consultation, experience gained from the pesticide contamination workshop, issues of concern to Tribes, and ideas for making the consultation process better.

C. Native American Collection:

(Museum Applicants Only) – provide approximate numbers for items in the following categories)

- | | |
|-------------|--|
| <u>6000</u> | Total number of items in your Native American collection. <u>There is an additional 500,000+ objects in the Native American archaeological collections.</u> |
| <u>121</u> | Number of Indian tribes, Alaska Native villages or corporations, or Native Hawaiian organizations possibly affiliated with items in your collection. |
| <u>504</u> | Number of Native American human remains in your possession or control (specify if these are individual bones or sets of remains). <u>400+ are partial to nearly complete</u> |

SECTION 2. PROJECT DESCRIPTION

All applicants must submit narrative responses to each of the four questions on the following pages. The response to each question must not exceed the space provided. Use a print size that is large enough to read comfortably (10 point or higher is recommended).

A. GRANT OBJECTIVES. What are the objectives of this project? Be specific.

This documentation project has five primary goals: 1) To consult with Native Nations and Tribes and conduct research to assist in the documentation of Tribal affiliation for sacred objects and objects of cultural patrimony from the Great Lakes region; 2) To provide training for WHS staff; Tribal Museum staff; other interested museum staff; and Tribal repatriation representatives on pesticide residue contamination of museum collections; 3) To compile documentation on human remains and funerary objects [associated and unassociated] in the collections of WHS and to provide that documentation to Native Nations and Tribes; 4) To train and assist curatorial staff in implementing traditional care and treatment plans for Native American collections; and, 5) To share information about the process of building partnerships between museums and Native Nations and Tribes at the annual Association of Midwestern Museums Conference.

1. Many objects from the Great Lakes region in the collections of the WHS have little documentation on Tribal affiliation. This grant would provide funding for a consultant with expertise in Native American ethnographic collections to assist museum staff with identifying Tribal affiliation, and proper documentation of its collection. This will provide better information for both the Museum and the Tribes during the NAGPRA consultation process. Documentation efforts will also include consultation with Elders, Cultural Committee members and others in Native communities throughout Wisconsin and Michigan. Funding would also be available for Tribal representatives to come to the Museum to view collections. Critical is the digital imaging of collections to facilitate access to the collections for those who are not able to travel to Madison.
2. A workshop will be organized to train WHS staff, Tribal Museum staff, other interested museum staff, and Tribal staff working on repatriation issues, on pesticide residue contamination of museum collections. This training will be done by faculty from the University of Arizona and will include: what museums know about how objects were treated; current methods of pest control; personal protective equipment and handling guidelines; how to find pesticides on objects; human health issues related to poisoning and toxicity; and tribal issues related to contaminated collections. A sample of the museum's collection will be tested for contamination as an initial assessment.
3. Documentation on human remains and funerary objects and their affiliation is frequently requested by Native Nations/Tribes. This grant will provide funding to hire a researcher to assist in documenting these collections. This will be a benefit to the WHS and the Tribes as they work through the repatriation process.
4. The WHS will work specifically with the *Great Lakes Ojibwe Cultural Protection and Repatriation Alliance* [GLOCPRA], representing the ten Ojibwe Bands in Wisconsin and the Upper Peninsula of Michigan to implement their traditional care and treatment plan. These include the use of cloth bags in certain colors, the appropriateness of light, the need to feed certain objects, using the four medicines, special requirements of menses, unique storage needs, and conducting ceremonies. Consultation will also be continued with the Forest County Potawatomi and the Menominee Nation, who have expressed a concern about the Museum's care and treatment of sacred objects and human remains.
5. The process of consultation, building strong partnerships, implementing traditional care and treatment plans for cultural objects and human remains is an important part of this project. The WHS will organize a second session on building partnerships between museums and Native Nations at the Association of Midwest Museums conference to be held in Cincinnati, Ohio in the fall of 2005. The first session, organized by WHS and Beloit College for the 2003 conference in Milwaukee, WI. was well attended and received outstanding reviews from the panel participants and the audience.

SECTION 6. SUPPORTING DOCUMENTS

All applicants must submit certain documents in support of the project proposal. Supporting documents should be attached to the application form in the order listed.

- A. Letters of commitment from Indian tribes, Alaska Native villages or corporations, or Native Hawaiian organizations that will participate in the proposed project, stating specific responsibilities. If travel to or from Indian tribal communities is planned, commitment letters from these tribes are required.

A letter of support is attached which represents the six Ojibwe Nations of Wisconsin and three in the Upper Peninsula of Michigan. Individual letters of support are from the Menominee Nation, Sault Ste. Marie Tribe of Chippewa, and the Lac Vieux Desert Band of Lake Superior Chippewa Indians.

- B. Letters of commitment from museums that will participate in the project, stating specific responsibilities. If travel to museums is planned, commitment letters from these museums are required.

Attached are letters of support from the Milwaukee Public Museum and Logan Museum regarding the workshop on pesticide residue contamination of ethnographic museum collections.

- C. Brief resumes (lengthy vitae or publication lists should not be submitted) for all project personnel or detailed positions descriptions and search criteria if personnel have not yet been chosen. A competitive selection process must be documented for hiring of personnel.

Attached are resumes for the Project Coordinator, one of the two Research Assistants, and the Collections Manager. A position description is attached for the Research Assistant that will be hired.

- D. Letters of commitment from project consultants, if they have been selected.

A letter of commitment from the faculty at the University of Arizona, and an outline of workshop on pesticide residue contamination is attached.

Consulting Agreement with the Wisconsin Historical Society

for

Contamination testing of 11 cultural objects

**Funded by
The NAGPRA Grant Program**

FINAL REPORT

September 24, 2005

Submitted by:

Nancy Odegaard, PhD, Conservator, Arizona State Museum

David R. Smith, MS, Analytical Chemist, Arizona State Museum

Steven Seifert, MD, Medical Director, Nebraska Regional Poison Center

Pesticide Contamination Tests for Cultural Objects
And
A Workshop: *Pesticides and Museum Collections: Guidelines for Detection and Safe Handling*

**Organized by the Wisconsin Historical Society Museum
in cooperation with the Wisconsin Federation of Museums**

Funded by the NAGPRA Grant Program

**Held at the University of Wisconsin-Madison
August 3-4, 2005**

BACKGROUND

Consulting agreements were signed between the Nancy Odegaard, David Smith, Alyce Sadongei, Steven Seifert and Wisconsin Historical Society. The agreements were part of a NAGPRA Grant proposal submitted in 2005 arranged by Jennifer Kolb, Deputy Director for the Wisconsin Historical Society. The agreement refers to the following tasks:

1. To demonstrate the XRF sampling procedure and testing protocol for heavy metal testing and Pesticide Contamination Workshop held at University of Wisconsin. This activity is will be in conjunction to a series of lectures, demonstrations and discussions held with invited participants. The participants will include tribal members, conservators, museum employees and related cultural representatives from a variety of institutions within the Wisconsin, Minnesota, Illinois area.
2. Test for heavy metal contamination on up to 10 specimens provided by the Wisconsin Historical Society in Madison.
3. Produce a report that describes the sampling, testing methodology, test results, and proposed recommendation for handling the tested objects.

TASK ACTIONS

Task 1: Staff of the Wisconsin Historical Society will determine which of the American Indian cultural objects of the Wisconsin Historical Society collections are the best candidates for pesticide testing. Jennifer Kolb and Diana Zlatanovski, Research Curator, selected the items for the contract study. One object will be selected for demonstration purposes and others will be discussed during the workshop program.

Task 2: Test for arsenic, lead, mercury and other heavy metal detectable by the Niton XRF instrument on eleven (11) cultural items. Consultant will subsequently complete quantitative and qualitative pesticide analyses on the testing specimens. In one session, members from the Wisconsin Historical Society and the University of Arizona Team tested the items in a workroom at the Wisconsin Historical Society building adjacent to the University of Wisconsin, Madison campus.

Task 3: Produce a report that describes the project objectives, historic pesticide applications (when treatment information exists), Niton XRF calibrating and testing methodology, test results, proposed recommendations for handling and cleaning Katsina Friends and other tested Hopi cultural items This document represents a complete report of the project objectives, the sampling

and testing methodology, the test results and the proposed recommendations for handling objects contaminated by pesticides.

PROJECT OBJECTIVES

This study included 11 multi-material and multi-component objects that are owned by the Wisconsin Historical Society. Two objects have been identified for possible repatriation, a few objects are considered potentially sensitive, and the others are representative of the range of the collection in that they were acquired over broad time periods, are from various areas and collector sources, and include a range of materials compositions. The selected objects were examined, sampled, and the samples were analyzed for the purpose of determining potential health risks, and possible methods for mitigating the risk. The project was developed by the Wisconsin Historical Society and was funded by them through a NAGPRA Grant.

SAMPLING AND TESTING METHODOLOGY

Each object was individually removed from storage cabinets, examined, described, and photographed. During the course of examination, several locations on each object were analyzed by X-Ray Fluorescence (XRF) using a hand held Niton XLi 700 series analyzer. The analyzer was purchased by the Arizona State Museum Conservation Laboratory with funds from a NCPTT grant and funds from a previous contract with the Hopi Tribe. Locations on the items of specific concern included potential eye-nose-mouth exposure routes for toxins. These areas and all pigments were specifically tested.

XRF TECHNOLOGY

XRF is an analytical technique, which is widely employed for the analysis of elemental composition of materials. The sample is irradiated with a beam of X-rays (from a sealed source), which causes the atoms of each element to fluoresce at characteristic wavelengths and identify the elements present in the sample. The amount of each element in the sample can be determined by measuring the intensity of the fluorescence. The sensitivity of the instrument depends on the x-ray source. The following elements can be detected: (underlined items are of particular interest as pesticide contaminants)

<u>Cadmium (Cd)</u>	<u>Arsenic (As)</u>
<u>Chromium (Cr)</u>	Selenium (Se)
Manganese (Mn)	<u>Lead (Pb)</u>
Magnesium (Mg)	<u>Mercury (Hg)</u>
Iron (Fe)	Rubidium (Rb)
<u>Cobalt (Co)</u>	Strontium (Sr)
Nickel (Ni)	Zirconium (Zr)
<u>Copper (Cu)</u>	Molybdenum (Mo)
Zinc (Zn)	

TOXICITY INTERPRETATIONS

The XRF readings were downloaded from the instrument and compiled into tables for each specimen. Concentrations were expressed as micrograms per square centimeter, with attention to relative surface area of involved pigments. Data tables and specimen images were interpreted by a medical toxicologist familiar with NAGPRA processes and concerns. The data was interpreted

using the resources and knowledge of medical toxicology and the Nebraska Regional Poison Center. These interpretations are included at the end of each specimen test sheet.

However, certain general statements apply to the group of objects as a whole and summary descriptions of the toxicities of various metals are also presented here.

Exposure

When a substance is taken into the body, we call that an "exposure." This can occur by ingestion (directly or secondary to subsequent activities, such as eating without washing the hands), inhalation (with absorption into the body through the lungs or by being secondarily swallowed), or absorption through the skin. Not all substances can be absorbed into the body by all routes. In general, just being near an object does not cause toxicity. Sometimes the route of exposure determines the specific toxicities seen.

Cautions

XRF detects heavy metals, but not their form. Most metals will not be in their pure metallic state, but rather combined with other elements, inorganic or organic compounds. The form of a metal often greatly influence toxicity. We also cannot measure the metal's availability to be transferred to an individual, and thus result in an exposure. Availability of the toxic components depends on several things. Potentially toxic metals that were introduced into an object as part of the tanning process, or as part of material dyes, for examples, are likely to be tightly bound up in the material and would only be a health problem if the object were used in some very unusual way (such as being chewed by an child or animal). Toxic materials that were applied to the object, such as paints or pesticide treatments, might be more likely to be shed from an object and contaminate the environment or individual.

Treatment of the objects with organic pesticides was not determined in this analysis. Although we think it unlikely that a persistent organic pesticide was applied directly, and that persistent secondary contamination from treatment of storage areas is also unlikely, this cannot be completely ruled out.

Health Risks

The health risk of any object will be the result of a number of factors, including: The specific substances present, their availability to be taken into the body, how the object is handled and stored, whether and what type of exposure has occurred, the dose and timing of exposures, and the availability and usefulness of therapeutic interventions.

If an object is kept as a museum piece, with storage and display in standard settings, handling with gloves and respiratory protection, no unprotected use, and proper maintenance of storage areas, even a heavily contaminated object would pose very small health risks.

Objects that are stored and handled at lower levels of isolation and protection may result in exposure to toxic substances by ingestion, inhalation or dermal transfer. It is difficult to impossible to know how available materials on the objects are for transfer, however. Finally, although it may seem obvious, objects that were improperly stored in the home or mishandled, resulting in, say, accidental ingestion by a small child or animal, would pose health risks based on total object amounts of various substances.

Toxicological Discussion of Specific Metals:

Lead: Lead is toxic in a variety of forms. In children exposed chronically to low levels, it results in neurobehavioral problems noticed mostly as learning and developmental difficulties. In adults, or in high enough levels in children, lead can cause anemia (low blood counts), abdominal pain, vomiting, malaise, confusion, seizures, high blood pressure, and peripheral nerve dysfunction. There is no biologic role for lead and ideally, we would take in none. It is not absorbed through the skin, but rather is inhaled and then swallowed, or gets on the hands and then is consumed when we eat without first washing it off. It is present in a variety of environmental sources and we inevitably consume some lead in the course of our day. Children less than 7 years shouldn't ingest more than 6 mcg of lead a day. In adults, ingestion of 10 to 30 grams would be potentially fatal.

Mercury: Mercury is commonly found as various salts, which are toxic to the kidneys and nervous system. A condition called acrodynia (rash, sweating, weakness, nerve dysfunction) can occur in children chronically exposed to inorganic mercury compounds. Mercury salts can be taken into the body by ingestion or absorbed through the skin, especially in children, if the skin is broken, or if there is prolonged contact. Mercury was used as a pesticide, particular with leather objects. Thus it would be more likely to be on the surface and be more available, both from routine handling and environmental shedding. It would, of course, also be available if there were an accidental ingestion. About 1000 to 2000 mg acutely is the usually cited fatal dose, but fatality has been reported with as little of 500 mg. Smaller amounts may produce some acute toxicity if there is a large exposure (ingestion of a significant portion of the object) or chronic toxicity if there is continued exposure over time. Occupational standards keep daily mercury exposure (the amount actually taken in) below 25 mcg.

Arsenic: Inorganic arsenic compounds were frequently used as a preservative for leather, fur and feather materials from the 1800's until about 1950. Trivalent arsenic is the most toxic form, and it is this form that was used when objects were treated. Arsenic in this form can cause severe illness or death with an acute exposure to as little as 100 to 200 mg in an adult and 20 mg in a child. Arsenic is also capable of producing chronic toxicity when exposed to as little as 3 to 4 mg daily over a period of time. Chronic effects may include various cancers, vascular and skin diseases.

Chromium: Hexavalent chromium salts have significant toxicity, and the hexavalent form is sometimes used in tanning. The XRF is unable to determine the form of the chromium, but it should be assumed that some or all of it is of this more toxic type. Hexavalent chromium is most seriously associated with various cancers, including lung and kidney, seizures, and kidney failure. There is a biologic need for chromium in the diet, and amounts of 25 to 35 micrograms (mcg) per day are recommended. The oral dose that will cause death in humans is estimated to be between 1 to 3 grams. In children, a single dose of 10 mg/kg body weight is estimated as the minimum lethal dose.

Zinc: Zinc has low toxicity, capable of causing skin irritation at high levels or lung injury if exposed to zinc vapors during welding, for example.

Iron: Iron is an essential metal that is incorporated in red blood cells for oxygen transport, as well as in other cellular compounds and processes. It is capable of causing human illness if it is taken in excessive amounts.

Specific treatments of toxicity are beyond the scope of this report.

SUMMARY OF RESULTS

This study examined and tested 11 objects. All objects were tested for arsenic, mercury, lead and other heavy metals. Many of the items include attachments such as metal disks and glass beads that are made of metal. Therefore, it is not uncommon to see fairly high levels of heavy metals present on objects. Interpretation clarifies that a heavy metal pesticide contaminant (distributed across a wide surface area and range of material types) is present on the objects. This is consistent with the historic use of a *mothproofer* at the museum.

Specimen Test Sheet

Specimen Number: 1

Object Name: Ceremonial spoon

Culture/ Provenience: Ojibwe, Lake Vieux Desert, Wisconsin

Material Description: Wood spoon with brown fur/skin (mink?) wrap and ribbons.

Measurements: 42.0cm L x 7.0cm W

Total Area Estimate: 588 cm²

Museum Name: Wisconsin Historical Society

Museum Catalog Number: 1954.1482

Museum Collection Name: Dr. A. Gerend, Deer Isle, Maine

Accession Date: April 1939

Museum Documentation: Object description and photographs exist in related Archives collection.

Recorded Treatment History: Current collection staff has no first-hand knowledge of pesticide use on the collections. An annual report from 1956 and 1958 refer to "Moth proofing" and to "treating the entire collection".

Tribal/ NAGPRA Status: Under repatriation claim from La Vieux Desert, Michigan.

Storage Location: HQ.36.1.1.11

Previous Storage Locations: -

Chemical Testing Results with XRF Spectroscopy on August 3-4, 2005 in Madison, WI

Reading No	Description 1954.1482	Duration (s)	Pb $\mu\text{g}/\text{cm}^2$	As $\mu\text{g}/\text{cm}^2$	Hg $\mu\text{g}/\text{cm}^2$	Zn $\mu\text{g}/\text{cm}^2$	Cu $\mu\text{g}/\text{cm}^2$	Ni $\mu\text{g}/\text{cm}^2$	Fe $\mu\text{g}/\text{cm}^2$
587	Spoon Fur	60.09	5.19	ND	ND	11.8	2.52	3.39	3.53
588	Spoon ribbon tan	60.42	10.1	ND	ND	4.41	5.8	3.67	10.17
589	Spoon ribbon red	59.44	7.56	ND	ND	4.02	4.78	3.53	7.3
590	Spoon wood	60.36	6.3	ND	ND	6.05	ND	3.02	20.36
591	Spoon back Fur	60.04	2.76	ND	ND	8.95	ND	2.44	ND

Interpretation:

This object contains no arsenic or mercury, and small amounts of lead, zinc, copper, nickel, and iron. This may represent pigments or residues of pesticide treatments.

Health Risk:

Routine storage, display, handling, and use of this object pose minimal human health risks.

